



Federal Fiscal Year 2023 Strategic Plan for Traffic Records Improvements

Prepared for:

**National Highway Traffic Safety Administration,
U.S. Department of Transportation**

Submitted by:

**Executive Office of Public Safety and Security's Office of Grants and Research in
conjunction with the Massachusetts Traffic Records Coordinating Committees**

May 2022

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1.0 BACKGROUND

1.1 Introduction

This FFY 2023 update to the Commonwealth of Massachusetts' Strategic Plan for Traffic Records Improvements was developed by the Massachusetts Executive Office of Public Safety and Security's (EOPSS) Office of Grants and Research (OGR), with support from the Commonwealth's Executive-level and Working-level Traffic Records Coordinating Committees (TRCC).

The purpose of this document is to provide traffic records stakeholders in the Commonwealth with a strategic plan for improvements of core traffic records systems. The plan is based primarily on recommendations identified through the 2019 Commonwealth of Massachusetts Traffic Records Self-Assessment.

The Executive-level TRCC voted to approve this FFY 2023 plan update on April 27, 2022, empowering OGR to make any remaining minor edits before the expected submission in early July 2022.

A TRCC is a statewide stakeholder forum to primarily facilitate the selection, implementation, and evaluation of projects to improve a state's core traffic records systems. The Massachusetts TRCCs are a partnership of representatives from the highway safety, transportation, law enforcement, criminal justice, and public health professions. The Working-level TRCC (WTRCC) and the Executive-level TRCC (ETRCC), with this plan as a guide, strive to improve the accessibility, accuracy, completeness, integration, timeliness, and uniformity of the systems listed below. It is expected this will lead to better problem identification and countermeasure selection, program implementation, and program evaluation by the above-mentioned professions in Massachusetts.

The Secretary of Public Safety and Security oversees OGR, which is the lead entity in the Commonwealth for the application for and administration of federal highway safety funding from the National Highway Traffic Safety Administration (NHTSA), including those funds for traffic records improvement.

In this role, the Secretary serves as the Governor's Representative for Highway Safety.

The ETRCC is currently chaired by Kerry Collins, the Undersecretary of Forensic Science and Technology for EOPSS. The WTRCC is currently chaired by Jeff Larason, OGR's Highway Safety Division Director, who also serves as vice chair of the ETRCC. The current State Traffic Records Coordinator, Brook Chipman, a Senior Program Manager within OGR, serves as vice chair of the WTRCC. TRCC purposes and responsibilities are enumerated in the TRCC charters in Section 1.2 and 1.3.

The Commonwealth's core traffic records systems are comprised of the following systems that are accessible to varying degrees to highway safety professionals, related disciplines, and the public:

Crash Data System

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Crash Data Supervisor
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Driver License/History Data System

Paul Franzese
Chief Operating Officer
Massachusetts Registry of Motor Vehicles
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EMS/ Injury Surveillance Data System

Scott Cluett
Office of EMS Director
Massachusetts Department of Public Health
scott.cluett@mass.gov

Rebekah Thomas
Director of Injury Prevention and Control
Massachusetts Department of Public Health
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Roadway Data System

Kevin Lopes
Director of GIS Services
Office of Transportation Planning
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Citation/Adjudication Data System

Sonja Singleton
Interim Director
Merit Rating Board
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Vehicle Registration Data System

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Assistant Registrar of Vehicle Services- Titles Administration
Massachusetts Registry of Motor Vehicles
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1.2 Role of the Working-Level TRCC

The WTRCC is the primary means by which communication and coordination are facilitated and perpetuated between collectors, custodians, and users of data that make-up the Commonwealth's traffic records systems.

The WTRCC organization, mission, vision, purpose, governance, and membership are enumerated in the WTRCC Charter.

Commonwealth of Massachusetts

Working-level Traffic Records Coordinating Committee (WTRCC)

FFY 2022-2023 Charter

ORGANIZATION

By recommendation of the National Highway Traffic Safety Administration (NHTSA) and the Commonwealth of Massachusetts' strategic planning activities, the Executive Office of Public Safety and Security (EOPSS) convened the first meeting of its Executive-Level Traffic Records Coordinating Committee (ETRCC) on January 22, 2010. The Commonwealth's prior Traffic Records Coordinating Committee (TRCC) then became a broad, working-level stakeholder group known as the Working-Level TRCC (WTRCC). The purpose of a two-tier TRCC was to establish and coordinate strategic, long-term planning activities at an executive-level and to continue to identify needs and solutions at a working-level. In Massachusetts, the ETRCC and WTRCC share the same mission and vision.

MISSION

Through the coordinated efforts of its member organizations, provide a forum for the creation, implementation, management, and dissemination of accessible, accurate, complete, integrated, timely, and uniform traffic records data to aid decision-makers working to reduce transportation-related fatalities, injuries, and economic losses in Massachusetts.

VISION

Save lives and reduce injuries on Massachusetts roadways by using efficient processes to collect, store, and analyze complete and accurate traffic safety information and by making it freely available to all safety stakeholders.

PURPOSE

Ensure that accurate, complete, and timely traffic safety data is collected, integrated, analyzed, and made available for decision-making by ETRCC and WTRCC member organizations and other public and private professionals. In accordance with the requirements contained in the Federal Register, Vol 83, No.

17, January 25, 2018, Section 1300.22, key functions of the WTRCC will include, but not be limited to:

1. Provide a forum for the discussion of highway safety data and traffic records issues and report on any such issues to the agencies and the organizations in the Commonwealth that create, maintain, and use highway safety data and traffic records;
2. Include representatives from the six core data systems that make up a State Traffic Records system (crash, citation, driver, vehicle, roadway, and EMS/injury surveillance systems) as well as users, collectors, and providers of traffic safety data;
3. Consider the views of and facilitate discussion between organizations in the Commonwealth that are involved in the administration, collection and use of the highway safety data and traffic records system;
4. Represent the interests of the WTRCC to outside organizations, and the ETRCC's interest if authorized by that body to do so;
5. Assist ETRCC and WTRCC members applying for public and private funds to support and improve traffic records;
6. Under the direction of the ETRCC, periodically review the status of selected traffic records data systems and provide feedback on the impact of any proposed changes on stakeholders;
7. Organize and conduct working groups as appropriate to address technical and programmatic needs of the WTRCC and the ETRCC's if authorized by that body to do so;
8. Document its collective support of the Strategic Plan for Traffic Records Improvement to the ETRCC and assure that the plan is appropriately updated each year for ETRCC approval in the areas of: data system progress, deficiencies, benchmarks and performance measures; project progress, challenges, benchmarks and performance measures; and documenting progress towards addressing the latest NHTSA and FHWA assessments;
9. Review proposed projects submitted in response to the Commonwealth's periodic Section 405c application process (administered by the EOPSS's Office of Grants and Research (OGR) and provide project recommendations to the ETRCC; provide monitoring assistance, implementation support, and reporting to the ETRCC on projects approved for funding.

Notwithstanding the above, the WTRCC recognizes:

- The responsibility of its member agencies to work collaboratively to achieve the statewide vision for traffic safety information systems;
- The responsibility of its member agencies to manage their own safety information systems to accomplish their mission by improving internal business processes;
- The need to create a collective sense of responsibility among its member agencies for developing and sharing safety data in support of the State's highway safety mission in a manner that minimizes cost, duplication of effort, and inefficiencies;
- The need to ensure regular communication with the Commonwealth's ETRCC regarding the issues they face at the day-to-day working level; and
- The need to work within their organizations to implement the recommendations of the *Commonwealth of Massachusetts Traffic Records Assessment*, 2019.

GOVERNANCE OF WTRCC

The Commonwealth's Traffic Records Coordinator will be appointed by the Highway Safety Division Director of the EOPSS/OGR to support both the ETRCC and the WTRCC. The Highway Safety Division Director of the EOPSS/OGR will serve as the chair of the WTRCC. The Traffic Records Coordinator will be the WTRCC vice chair and will serve in the chair's absence.

Each WTRCC member organization (see below) shall designate its member(s) of the WTRCC. WTRCC members will be renewed annually.

The WTRCC will meet a minimum of three times per year. A majority vote will be sufficient for WTRCC business matters. Each member organization will have one vote.

WTRCC MEMBER ORGANIZATIONS *

- Boston Region Metropolitan Planning Organization/
Central Transportation Planning Services
- Regional Planning Agencies (up to three recommended by the
Massachusetts Association of Regional Planning Agencies)
- Massachusetts Department of Public Health – Bureau of Health Care
Safety and Quality
- Massachusetts Department of Public Health – Injury Surveillance Program
- Boston Emergency Medical Services/Boston Public Health Commission
- MassDOT/Registry of Motor Vehicles
- MassDOT/Merit Rating Board
- MassDOT/Highway Division
- MassDOT/Office of Planning
- Local Police (One member of the Massachusetts Chiefs of Police
Association, one member of the Association’s Technology Committee,
and the Boston Police Department)
- University of Massachusetts/UMassSafe
- Executive Office of Public Safety and Security/Department of Fire
Services
- Executive Office of Public Safety and Security/Office of Grants and
Research
- Executive Office of Public Safety and Security /Office of the Chief
Medical Examiner
- Executive Office of Public Safety and Security/Massachusetts State Police
- Executive Office of Public Safety and Security/Municipal Police Training
Committee
- Executive Office of Technology Services and Security
- Massachusetts Trial Court

Current advisory members, with no voting powers:

- National Highway Traffic Safety Administration (NHTSA)
- Federal Highway Administration (FHWA)
- Federal Motor Carrier Safety Administration (FMCSA)

*The full WTRCC membership list, provided to TRCCs members prior to the 4/27/22 meeting of the ETRCC, and any changes confirmed at that meeting, are incorporated by reference into this plan.

1.3 Role of the Executive-Level TRCC

The ETRCC provides a forum for senior decision-makers to ensure optimum communication and coordination occurs between collectors, custodians, and users of data involved with the Commonwealth's traffic records systems. The ETRCC primarily does this by reviewing, refining, and approving recommendations resulting from the WTRCC.

The ETRCC's organization, mission, vision, purpose, governance, and membership are enumerated in the ETRCC Charter.

Commonwealth of Massachusetts
Executive-Level Traffic Records Coordinating Committee
FFY 2022-2023 Charter

ORGANIZATION

By recommendation of the National Highway Traffic Safety Administration (NHTSA) and the Commonwealth of Massachusetts' strategic planning activities, the Executive Office of Public Safety and Security (EOPSS) convened the first meeting of its Massachusetts Executive-Level Traffic Records Coordinating Committee (ETRCC) on January 22, 2010. A NHTSA Traffic Records Assessment

for Massachusetts, which took place March 2009, recommended the Commonwealth “establish the Executive-Level of the Traffic Records Coordinating Committee (ETRCC) to ensure full support and authorization of the TRCC and its members by the executives of all agencies in whose area of responsibility the components of the traffic records system fall.” To that end, EOPSS invited owners of the core traffic records systems and a small representative sample of data consumers and collectors (see below) to join the ETRCC. Broader stakeholder participation remains with the Working-level TRCC (WTRCC). In Massachusetts, the ETRCC and WTRCC share the same mission and vision.

MISSION

Through the coordinated efforts of its member organizations, provide a forum for the creation, implementation, management, and dissemination of accessible, accurate, complete, integrated, timely, and useful traffic records data to aid decision-makers working to reduce transportation-related fatalities, injuries, and economic losses in Massachusetts.

VISION

Save lives and reduce injuries on Massachusetts roadways by using efficient processes to collect, store, and analyze complete and accurate traffic safety information and make it freely available to all safety stakeholders.

PURPOSE

Ensure that accurate, complete, and timely traffic safety data is collected, integrated, analyzed, and made available for decision making by ETRCC member organizations and other public and private professionals. In accordance with the requirements contained in the Federal Register, Vol 83, No. 17, January 25, 2018, Section 1300.22, key functions of the ETRCC will include, but not be limited to:

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1. Maintain authority to review any of the Commonwealth's highway safety data and traffic records systems and any changes to such systems before the changes are implemented;
 2. Provide a forum for the discussion of highway safety data and traffic records issues and report on any such issues to the agencies and the organizations in the Commonwealth that create, maintain, and use highway safety data and traffic records;
 3. Consider and coordinate the views of organizations in the Commonwealth that are involved in the collection, administration, and use of highway safety data and traffic records systems, and represent those views to outside organizations;
 4. Represent the interests of the ETRCC and the WTRCC to outside organizations;
 5. Review and evaluate new technologies to keep the highway safety data and traffic records systems up-to-date;
 6. Assist ETRCC and WTRCC members applying for public and private funds to support and improve traffic records;
 7. Assure the Commonwealth's Strategic Plan for Traffic Records Improvement incorporates IT strategies and business plans and documents all sources of funding for data improvement projects in the plan;
 8. Approve the Commonwealth's annual Section 405c application, including projects supported by this funding source, submitted by EOPSS's Office of Grants and Research (OGR) to NHTSA;
 9. Review and provide input on other federal traffic records funding received by EOPSS/OGR; and
 10. Approve annually the membership of the ETRCC and the WTRCC, the TRCC coordinator, updates based on Section 405 guidance to the Commonwealth's Strategic Plan for Traffic Records Improvement, and performance measures to be used to demonstrate quantitative progress in the accuracy, completeness, timeliness, uniformity, accessibility or integration of at least one core highway safety database.

Notwithstanding the above, the ETRCC recognizes:

- The responsibility of its member agencies to work collaboratively to achieve the statewide vision for traffic safety information systems;
- The responsibility of its member agencies to manage their own safety information systems to accomplish their mission by improving internal business processes;
- The need to create a collective sense of responsibility among its member agencies for developing and sharing safety data in support of the Commonwealth's highway safety mission in a manner that minimizes cost, duplication of effort, and inefficiencies;
- The need to ensure regular communication with the Commonwealth's WTRCC regarding the issues they face;
- The importance of member agencies engaging in open communication to maximize the effectiveness, compatibility, and interoperability of any federally-funded projects in conjunction with the Strategic Plan for Traffic Records Improvements and will facilitate compliance with all federal reporting requirements.

GOVERNANCE OF THE ETRCC

The Commonwealth's Traffic Records Coordinator will be appointed by the Highway Safety Division Director at OGR to support both the ETRCC and the WTRCC. The ETRCC will be chaired by the EOPSS Undersecretary for Forensic Science and Technology. The Highway Safety Division Director at OGR will serve as vice chair to serve in his/her absence.

Each ETRCC member organization shall designate its member of the ETRCC. ETRCC members will be renewed each year.

The ETRCC will meet a minimum of once per year and more as needed. Each ETRCC member organization will have one vote. The ETRCC may extend membership to additional organizations and representatives by majority vote. Votes requiring a 2/3 majority of the ETRCC include approvals of a Strategic Plan for Traffic Records Improvement, a Section 405c application, and projects for Section 405c funding. A majority vote will be sufficient for normal ETRCC business matters.

ETRCC MEMBER ORGANIZATIONS *

- Massachusetts Association of Regional Planning Agencies
- Massachusetts Department of Public Health – Injury Surveillance Program
- Massachusetts Department of Public Health – Bureau of Health Care Safety and Quality
- MassDOT/Office of Planning
- MassDOT/Registry of Motor Vehicles
- MassDOT/Merit Rating Board
- MassDOT/Highway Division
- Massachusetts Chiefs of Police Association
- Executive Office of Public Safety and Security/Undersecretary for Forensic Science and Technology
- Executive Office of Public Safety and Security/Department of Criminal Justice Information Services
- Executive Office of Public Safety and Security/Municipal Police Training Committee
- Executive Office of Public Safety and Security/Massachusetts State Police
- Executive Office of Public Safety and Security/Office of Grants & Research
- Executive Office of Technology Services and Security
- Massachusetts Trial Court

Current advisory members, with no voting powers:

- National Highway Traffic Safety Administration (NHTSA)
- Federal Highway Administration (FHWA)

Federal Motor Carrier Safety Administration (FMCSA)

*The full ETRCC membership list, provided to members prior to the 4/27/22 ETRCC meeting, and any updates confirmed at that meeting, are incorporated by reference into this plan.

2.0 Traffic Records Systems

The Massachusetts core traffic records systems are managed by the following agencies:

- Registry of Motor Vehicles Division (RMV) of the Massachusetts Department of Transportation (MassDOT) manages the crash, driver history, and vehicle registration systems;
- Merit Rating Board (MRB) of MassDOT/RMV maintains operator driving history records consisting of at-fault crash claim records, comprehensive claim records, out-of-state incidents, and civil and criminal traffic citation information;
- Massachusetts Trial Court (MTC) manages adjudication information;
- MassDOT's Office of Transportation Planning (OTP) manages the road inventory file; and
- Massachusetts Department of Public Health (MDPH) and the Center for Health Information and Analysis (formerly known as the Division of Healthcare Finance and Policy) manage injury surveillance, EMS, and other healthcare/trauma/health insurance claims/death/behavioral risk factor information-related systems.

The following section provides a brief overview on each system. **Key changes to and accomplishments by these systems made since spring 2021 and expected through September 2022 are bolded and underlined below.**

2.1 Crash Data System

System Key Points

The RMV operates the Commonwealth's Crash Data System (CDS). Reports of more than 140,000 motor vehicle crashes are received annually by the RMV.

Total Number of Crashes in IMPACT Portal	
Year	Crashes
<u>2018</u>	<u>142,272</u>
<u>2019</u>	<u>140,939</u>
<u>2020</u>	<u>100,724</u>
<u>2021</u>	<u>123,311</u>

As of April 2022, the 2020 and 2021 files are 'preliminary'.

Crash Reports by Agency	2017	2018	2019	2020	2021	2022
Electronically Submissions	71.2% (236)	77.9% (278)	87.98% (315)	86% (317)	89% (318)	88% (275)
Paper Submissions	103	80	43	30	27	25
<i>This includes Campus Police, Non-police, Other Police and Transit Police</i>	358	358	358	358	358	358

As of 2022 approximately 88% percent of crash reports are received electronically from state and local law enforcement agencies.

The remainder are received on paper using either the Motor Vehicle Crash Police Report last revised in November 2019, or both methods. Police reports may be used to document the date, time, location, environment, and characteristics of a crash. The crash reporting criterion for both police and operators are: Any crash involving damage to any one vehicle or property exceeding \$1,000, or any injury or fatality.

The MassDOT Highway Division, Traffic Engineering and Safety Section, developed an automated process for attaching location coordinates to crash master records that has been in use since 2006. This process is based on standards for location data on crash reports coupled with an extensive set of location matching algorithms that can take the street names, route numbers, exit numbers, mile markers and other location data as supplied in crash reports.

The geocoding tool within MassDOT's crash data portal, IMPACT, was implemented in July 2019.

While 2020 crash data is not yet finalized/closed, as of this March 2022 submission, the automated geocoding rate is 82.97% and total geocoding is at 96.4% for all 2020 crashes. For 2021 crash data, also not finalized, the automated geocoding rate is 81.01% and total geocoding is at 95.13% for all 2021 crashes.

While the new system in IMPACT has put a lot in place to improve geocoding, it also includes features that will not automatically geocode crashes that had been geocoded in the past. An example is when local law enforcement agencies use an exit number of an interstate as the location point, the crash would have been assigned to that location, but now it also checks the posted speed and if the police input the posted speed as less than 40 mph, the system will not allow the crash to be automatically geocoded. The crash then must be manually reviewed. So while this may lower the automated geocoding rate, the locations are improved.

Continuing improvements have been made to these algorithms to try and improve geocoding and offset the data quality issues surrounding electronic submission. Extensive updates have been made to the MassDOT Planning Roadway Inventory road names (a project completed in 2014) to also improve the matching/geocoding rate. Crashes that are unable to be automatically geocoded are reviewed and located manually, depending on staffing availability. There were improvements implemented with IMPACT to accept the newer roadway information, however the CDS has not been updated to reflect some of the improvements in place from Planning's roadway file.

System Performance Measurement(s)

No information provided.

System Accessibility

Public access to data in the CDS is through MassDOT's crash data portal, IMPACT, at apps.impact.dot.state.ma.us/cdp/home. Select data in this system – specifically regarding fatal crashes – is provided to NHTSA's Fatality Analysis Reporting System (FARS) at www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars.

Training & Technical Assistance Opportunities

RMV has a Crash System Law Enforcement Liaison (LEL) that provides training and technical assistance to state and local law enforcement agencies. The LEL has been successful in updating the crash module used for all new ~~police~~ officer ~~police~~ trainings. She continues to work with the Massachusetts Police Training Committee (MPTC), who oversees the police academy curriculum and is the standard for all Massachusetts and state police academies, including the MBTA. The curriculum now has an updated Crash Module that reflects critical points and procedures when reporting a crash. In addition, the LEL attends many of the academy classes during the crash model portion of the training in order to answer questions and clarify information.

Since early 2020, UMassSafe's Tools Improving Crash Report Reviews Project has provided resources to assist law enforcement in better completing the narrative portion of the crash report. These and other resources to assist with crash reporting can be accessed at masscrashreportmanual.com.

Launched in September 2018, the E-Crash Report Manual web portal developed by UMassSafe serves as the data dictionary of the CDS. It is available at masscrashreportmanual.com. RMV works closely with UMassSafe to keep the manual up-to-date. **In September 2021, UMassSafe completed a 405-c funded project to enhance and expand the manual. The expansion included:**

-
- Stakeholder survey on use and future needs
 - Traffic Records News page
 - Addition of ANSI definitions to the data dictionary
 - Resources for Crash Record Management Systems Vendors
 - Interactive overlay for data dictionary
 - Extension promotion

Recent Developments & Challenges

MassDOT IT/RMV will begin the implementation of a new CDS in May 2022 and expects phase 1 to go-live early 2023.

The Boston Police Department launched a 405-c funded crash reporting application for mobile and desktop use in late December 2021. The RMV is testing the electronic crash report submissions and providing feedback to BPD. It is expected that all BPD crash reports will come in electronically spring/summer 2022.

In October 2021 the Massachusetts State Police completed with UMassSafe assistance a Section 405-c funded project to improve its training curriculum for crash reporting for new and current troopers.

Starting in April 2022, UMassSafe will use 405-c funding to further enhance the E-Crash Report Manual.

Beginning in late spring 2022, the Department of Criminal Justice Information Services will use 405-c funding to further roll-out its Massachusetts Automated Citation and Crash System to additional local police departments and undertake system enhancements. As of March 2022, the Massachusetts State Police and 200 local police departments are participating in MACCS.

Starting in early summer 2022, the Department of Public Health's Injury Surveillance Program will use Section 405-c funding to further assess the completeness, accuracy, and uniformity of key variables of crash data and

present the recommendations for potential data quality improvement actions and related projects to the Traffic Records Coordinating Committees.

2.2 Roadway Data System

System Key Points

The MassDOT Office of Transportation Planning (OTP) maintains the Road Inventory File (RIF) for Massachusetts. This file, which contains more than 36,000 centerline miles and more than 71,000 lane miles of roads, serves as the foundation for the State's Geographic Information System (GIS).

This file is used for a variety of purposes, such as:

- Identifying functional classification, jurisdiction, and National Highway System (NHS) status of all roadways in the State;
- Helping to fulfill the Federal Highway Administration's Highway Performance Monitoring System (HPMS) reporting requirements;
- Determining centerline miles by city/town for allocating State Aid Funds to communities; and
- Supporting development of safety improvement projects.

The Traffic Engineering Section of the Highway Division of MassDOT works in concert with RMV to locate and geocode records in the CDS. The CDS uses roadway information as the basis for locating crashes. Approximately 90% of crash records are matched to a location automatically. However, the accuracy of crash location data depends on both the characteristics of the roadways (and the degree of difficulty in describing crash location due to the complexity of roadway geometry), and degree of precision by police in correctly providing and coding crash location information in their reports.

Traffic counts and pavement condition ratings are obtained on a three-year cycle, and this data is used to update the RIF on a continuous basis. While Massachusetts historically has used ortho-photography to verify the accuracy and completeness of road features and characteristics, the Commonwealth moved to use of a video log for ongoing verification activities of state-owned

roadways.

System Performance Measurement(s)

The RIF is generated from an attribute event-based database utilizing Esri's Roads and Highways system. The attributes are registered to the Linear Referencing System (LRS). The database is updated through various stakeholders within MassDOT and other agencies through Event Editors or Web Services. MassDOT's Office of Transportation Planning GIS Services team regularly provides updates to the database.

System Accessibility

GIS data is provided to the public through GeoDOT, a web-based GIS Platform at massdot.maps.arcgis.com. GeoDOT contains GIS layers to download, including the RIF file, as well as interactive maps and applications. Requests for services including GeoDOT accounts, software and training are available here. Municipalities provide updates to the local road network using the Road Inventory Submission Application (RISA).

New applications RoaDIE and BikeUR allow DOT employees, municipal employees, and the public to submit requests for updates to the RIF and Bike Facility Inventory respectively. These applications enable the GIS editors to rapidly respond to data update requests to improve the completeness and accuracy of the data within the RIF.

Training & Technical Assistance Opportunities

MassDOT's Office of Transportation Planning has deployed an improved RIF data dictionary that incorporates changes. Training is available for the GeoDOT GIS platform for MassDOT Employees to better leverage GIS systems.

Recent Developments & Challenges

MassDOT's Office of Transportation Planning has a GIS team member serving as GIS QC Coordinator. This position is now documenting our data management processes as well as developing metadata standards. The GIS QC Coordinator

meets regularly with Road Inventory editors to understand their workflows and install best practices throughout the process.

As of March 2022, 117 RoadIE requests have been completed, and 68 Bicycle Inventory Requests have been completed. These applications have allowed the GIS data team to keep a record of data requests and monitor response times. This will allow us to measure accuracy improvement and how rapidly the GIS data team can respond to requests for updates moving forward.

In the last year, major improvements to many intersections in the RIF were completed to improve crash geocoding and to update these intersections to be compliant with MIRE 2.0 data standardization. Over 1,000 intersections in the RIF were rebuilt.

2.3 Driver Data System

System Key Points

Driver records are created by the RMV and kept in ATLAS, but the MRB maintains operator driving history records consisting of at-fault crash claim records, comprehensive claim records, out-of-state incidents, and civil and criminal traffic citation information. ATLAS includes records for approximately five million commercial and non-commercial drivers.

The Massachusetts State Police (MSP) Office of Alcohol Testing manages testing for blood alcohol concentration (BAC). The results from breathalyzer tests conducted in the field are broadcast to the MSP every 90 minutes. The MSP relays the information to the RMV nightly, which enables the RMV to have current information on file and to take immediate actions on cases pending receipt of BAC test results.

In 2008, the RMV, the MRB, and the Massachusetts Trial Court (MTC), including the District Court Department and the Boston Municipal Court Department, worked together to develop an electronic interface between the MTC and the MRB. Virtually all adjudication decisions are transferred electronically each night by MTC to the MRB. This information is used to suspend or revoke

licenses and to make adjustments in the insured's automobile insurance premium when applicable. This change closed a significant gap in communications and has substantially improved the process of using conviction data to suspend or revoke licenses and to adjust the insured's automobile insurance premium.

System Performance Measurement(s)

The RMV legacy database, ALARS, was replaced by a web-based database titled ATLAS, which was developed in cooperation with FAST Enterprises. There is a team of RMV managers and staff who meet regularly with FAST developers to monitor and improve this new system and its functionality as business operations prove the need.

System Accessibility

The 1994 Federal statute "Driver's Privacy Protection Act of 1994" dictates motor vehicle departments must adhere to with regard to driver data, and impacts the RMV's system accessibility. The RMV negotiates with agencies requesting access to data to create legally binding Memorandums of Understanding.

Training & Technical Assistance Opportunities

The RMV Training Department provides training to end users of the new system as requested and needed. FAST developers provide technical assistance as requested and needed.

Recent Developments & Challenges

The RMV implemented the first phase of its upgraded, web-based license and registration system known as ATLAS in March 2018. The Issuance License/Driver portion was successfully implemented. Release two of ATLAS to enhance the Vehicle and Registration portion was done in November 2019. The previous database, Automated License and Registration System (ALARS), contains historical data of both vehicle and operator data and can be queried, if needed. Since the ATLAS rollout, a team of system creators and RMV managers and staff meet to provide critical feedback to developers of the system to ensure data quality and control issues are addressed. The Director of Driver Licensing is integral to, and involved in, these meetings.

2.4. Vehicle Data System

System Key Points

The RMV manages vehicle title and registration information using the ATLAS system, which contains approximately seven million commercial and non-commercial registrations.

Below is registration and title issuance activity for 2017 – 2019.

2017	Registrations	1,315,412
	Titles	1,346,097
2018	Registrations	1,312,488
	Titles	1,353,886
2019	Registrations	1,284,719
	Titles	1,775,229

A registrant is identified with a Massachusetts driver license number or an assigned non-driver identification number if the registrant is not a driver.

Registration and title applications must include proof of insurance. A Manufacturer's Certificate of Origin or a previous title also must be presented along with an odometer reading as part of the title application. After receiving the registration document, plates and expiration decals, a vehicle safety inspection is required within seven days. Thereafter, annual safety inspections are required. Odometer readings are recorded in connection with safety inspections and any required emissions inspections.

Application for title must be done within 10 days of acquiring a vehicle or trailer unless the type of vehicle is exempt from titling. Information on previous title data, including brand information, is acquired through the National Motor Vehicle Title Information System (NMVTIS) of the American Association of Motor Vehicle Administrators (AAMVA). Massachusetts is a full participant in

NMVTIS enabling immediate electronic inquiries with other NMVTIS Jurisdictions. Massachusetts also uses the Electronic Lien and Title (ELT) system. ELT enables direct interactions with lien holder institutions.

Title and registration transactions are also completed by dealers, insurance companies/agents and fleet companies through the RMV's Electronic Vehicle Registration (EVR) Program using a Service Provider application that interfaces with ATLAS. Approximately 50% of the total new title and registration transactions are processed through the EVR Program.

System Performance Measurement(s)

No information provided.

System Accessibility

No information provided.

Training & Technical Assistance Opportunities

No information provided.

Recent Developments & Challenges

The new Vehicle Services portion of the ATLAS system went live in November 2019. The new system introduced point of sale scanning, an automated plate inventory system, integrated case management functionality, and the expansion of service channels and business partnerships.

The rollout of Phase 3 of the Electronic Vehicle Registration (EVR) Program began in 2021. The EVR Lite Program allows the car dealers and insurance agencies to complete casual/non-dealers sale transactions. There are 69 locations on EVR Lite as of spring 2022. Six of those are car dealers, the rest insurance agencies. Two Service Providers currently offer the Lite Program with a third Service Provider getting ready to release it in their software in the April/May 2022 timeframe.

2.5 Citation/Adjudication Data System

System Key Points

The MRB is the sole repository for all Motor Traffic Citations issued in the Commonwealth. The MRB receives copies of citations from Massachusetts police departments and courts and hearing requests and payments from violators and applies these records to an individual's driving history record.

Civil Motor Vehicle Infractions (CMVI) citations are sent directly to the MRB from the issuing police department. The MRB applies the citation to the violator's driving history record. The violator has 20 days from the date of violation to either pay the total amount due or to request a clerk-magistrate hearing. The payment or hearing request (accompanied by a \$25.00 Court Filing Fee payment) is submitted to the MRB by the violator. Failure to do either action results in late and release fees being added to the citation, as well as future suspension of their driver's license or registration. If a payment is made, it is adjudicated as an admission of responsibility. If no response is provided within 20 days, the violator is found responsible and can be charged late fees and may face additional penalties, including suspension of license.

Requests for clerk-magistrate hearings along with a filing fee are processed and a file of hearing request records is sent via batch FTP transfer to the Massachusetts Trial Court (MTC). Upon disposition, MTC transmits a file of hearing results records via batch FTP transfer to MRB. These results are uploaded to the RMV and processed, updating the operator driving history records with the submitted results. Payments from violators are processed and the citation is adjudicated as responsible.

Multiple copies of a criminal citation are delivered to the court by the issuing police department. The court forwards a copy of the criminal citation to the MRB. The MRB applies the citation to the violator's driving history record. The court is responsible for conducting a hearing and rendering a disposition in a criminal matter. Upon issuance of a disposition, the court electronically submits the findings to the MRB. Upon receipt of the disposition, the MRB updates the citation record.

While the exchange of criminal citation adjudication results and clerk-magistrate hearing requests and results between MTC and MRB is now almost exclusively electronic, much of citation processing remains a paper-based process. This includes audit sheets, which are completed by officers to account for every citation, specifically citations that are destroyed or voided.

An eCitation process, known as the Motor Vehicle Citation and Crash System (MACCS), transmits demographic and offense-specific information captured on the Massachusetts Uniform Citation electronically and this information is then validated against the ATLAS database. The data validations built into the eCitation system, in conjunction with quality controls at the MRB, have shown promising results in improving data quality.

Operators who are issued MACCS citations receive an eCitation Receipt on an 8.5x11 inch sheet of paper. The eCitation should be available for inspection in ATLAS within 72 hours, with 80.1% currently available for inspection within 24 hours.

The MRB in collaboration with the MTC continued its efforts to streamline and improve the efficiency in the processing of criminal motor vehicle violation citations by working to add Juvenile Courts and Superior Courts to the electronic file transfer process to submit criminal traffic citation judgment records to the MRB. Testing was completed and all changes to MRB applications were migrated into the ATLAS production environment. All Juvenile Courts and 10 Superior Courts are now submitting electronic records to the MRB.

The RMV/MRB is able to promptly suspend/revoke the driver license of individuals found guilty of criminal charges by these courts. These efforts rectify any lapses in updating driving history records and ensure future records are current and sanctions promptly applied.

The registrant is identified with a Massachusetts driver license number or an assigned non-driver identification number if the registrant is not a driver.

System Performance Measurement(s)

The RMV legacy database, ALARS, was replaced by a web-based database titled ATLAS, which was developed in cooperation with FAST Enterprises. There is a team of RMV managers and staff who meet regularly with FAST developers to monitor and improve this new system and its functionality as business operations prove the need.

System Accessibility

Statutes require the MRB collect, gather, and compile citation data for drivers.

Training & Technical Assistance Opportunities

The RMV Training Department provides training to end users of the new system as requested and needed. FAST developers provide technical assistance as requested and needed.

Recent Developments & Challenges

The Department of Criminal Justice Information Services continues to use 405-c funding to roll-out MACCS to additional local police departments and undertake system enhancements. As of March 2022 there are 200 local police department participating in MACCS. Approximately, 92% of the Massachusetts State Police participate in MACCS. Between the launch of MACCS in April 2017 and February 2022, the State Police issued through MACCS 921,748 citations and local police 394,044 citations. eCrash reporting through MACCS is limited at this point, as the State police and most local police use the eCrash reporting function of their own records management systems to report to RMV's Crash Data System.

In spring 2022 the MRB started a multi-phase effort to enhance the ability of traffic records stakeholders and the public to view and analyze traffic citations data and trends. The greater accessibility to this data will assist planning efforts of these stakeholders to reduce traffic crashes and resulting fatalities, injuries, and economic loss in Massachusetts. The proposed public Internet portal would make available select citation data in both summary and detail format. This project is being conducted in two phases, with this task providing 405c funding for only the first phase. In Phase 1 the MRB's project team will use MassDOT IT contractors to identify data

needs and system requirements from stakeholders to develop a detailed project scope, schedule, and budget for Phase 2. This first phase will also see development of the necessary procurement documentation to hire a vendor to complete Phase 2. Additionally in Phase 1, improvement will be made to the current data dictionary of the citation data system. In Phase 2 of the project the selected vendor will work with MassDOT IT and MRB staff to build and implement the portal.

Opportunities exist for improving linkages among various system components – such as adjudications with both the vehicle and crash files, which could improve the efficiency of vehicle-based administrative suspensions and revocations, as well as to increase the ability of the data in the system to support research. These opportunities will continue to be investigated.

2.6 Injury Surveillance/EMS Data System

System Key Points

Massachusetts Ambulance Trip Record Information System (MATRIS) – managed by MDPH collects Emergency Medical Services (EMS) trip information that complies with the National EMS Information System (NEMSIS) dataset. The department is currently collecting both NEMSIS V2 data and NEMSIS V3, as the V3 system launched 2/28/19. As of 3/31/22, 309 out of 310 licensed ambulance services had migrated and were submitting data to MATRIS NEMSIS V3 and 310 were approved to make the migration. The NEMSIS V3 data is superior to the V2 data because DPH developed comprehensive Schematron validation rules that are enforced as criteria for acceptance to MATRIS. DPH will review the data quality and determine updates needed to the Schematron validation rules to continue to improve quality. In FY 2020, DPH developed an RFR to contract with a vendor for hosting of the MATRIS infrastructure to address gaps in functionality and improve efficiency. Responses were reviewed and a contract fully executed with the selected vendor in spring 2021. Migration to the vendor hosted infrastructure will be completed in FY 2022. DPH began submitting the NEMSIS V3 data to the NEMSIS national repository in July 2021.

Massachusetts Hospital Case-Mix Data – Hospital discharge data (HD), emergency department (ED) discharge, and outpatient observation stay (OOS)

data, collectively referred to as “Case-mix Data”, are submitted by all Massachusetts acute care hospitals to the Center for Health Information and Analysis (CHIA). DPH receives the data from CHIA and conducts its own data quality checks and coding for DPH programs. Relevant data include ICD-10-CM diagnosis and external cause codes (V00-Y99 in ICD-10-CM), patient demographics, a unique patient identifier, hospital facility, dates of medical care, length of stay, discharge disposition, services and procedures performed, hospital charges, and whether the visit is for active treatment, routine treatment, or treatment of sequelae. Hospitals began using ICD-10-CM rather than ICD-9-CM codes in Oct. 2015. ICD-10-CM external cause codes provide greater specificity around vehicle and road user type than ICD-9-CM codes. Diagnosis codes in HD data are also being used to identify hospitalized drivers and non-motorists who were under the influence of alcohol and/or drugs at the time of the crash.

Massachusetts All Payer Claims Database (MA APCD) - includes health insurance claims data collected from commercial payers, third party administrators and public programs (Medicare and MassHealth (the Massachusetts’ Medicaid program) by the CHIA. Due to state health care reform law which had the aim of providing health insurance to all residents, Massachusetts leads states with the most complete population insurance coverage, 97% of its residents have health insurance. Therefore, the MA APCD is one of the most comprehensive sources of state health claims data from public and private payers in Massachusetts. These data sets come both from medical insurers and from specialty insurers and administrators of “carved-out” services including pharmacy, mental health/chemical dependency, dental, and vision. While several states have All Payer Claims Databases, the MA APCD has a unique focus on the efficiencies to be achieved by having a single independent agency (the Center for Health Information and Analysis)– as opposed to multiple state agencies. While the case mix data collects data only from Massachusetts acute care hospitals, the MA APCD includes health care data from all health care providers regardless of care settings regardless of geographic location. The ambulance, ED, hospitalization, rehab, and pharmaceutical claims for Massachusetts motor vehicle crash victims receiving care in state and out of state are all in the Massachusetts APCD. CHIA has also enhanced the MA APCD by creating a member link entity identifier which enables cross carrier analysis. This type of enhancement facilitates analysis of injured patients across the entire continuum of care from prehospital care to rehabilitation even if the patient changes insurance carriers.

Trauma Registry – collected by MDPH, all hospitals that treat trauma patients submit data on all trauma inpatient discharges, all trauma observation stays, and trauma ED visits for patients who die or are transferred from the ED. These data include patient blood pressure, respiratory rate, pulse, protective devices, airbag deployment, child specific restraints, cause of injury and location of injury ecodes, hospital-based drug and alcohol test results, injury date, injury city, mode of transport to hospital, abbreviated injury scale (AIS), Glasgow coma scores, complications, and comorbidities. After submission by hospitals, MDPH may add other fields such as geocoded census data and several survival probability metrics including revised trauma score, shock index, injury severity score, new injury severity score, and AIS-based trauma mortality prediction model using up to five worst injuries, ICD-9-CM-based trauma mortality prediction model, and an indicator for multiple injuries to the same body region. The system was upgraded to include approximately 60 data elements with ICD-10-CM and AIS 2005/2008 in 2016. Enhancements were also made in 2017 to meet the NTDB 2016 and 2017 updates and ability to accept multiple submission years simultaneously.

Traumas reported to Massachusetts Trauma Registry by Federal Fiscal Year (FFY)*	
FFY2019	FFY2020
62,058	49,495

*Massachusetts Trauma Registry, current as March 29, 2022. FFY 2021 submissions are due May 1, 2022 and Quarter 1 FFY 2022 submissions are due June 1, 2022.

During the FFY 2019, additional upgrades were made to conform to new National Trauma Databank (NTDB) data submission requirements. Comorbidity and complications fields were removed in accordance with NTDB requirements and replaced with yes/no indicator fields. The option to enter ‘not recorded’ or ‘unknown’ for some fields was added and new fields were included to allow entry of Initial Field GCS, if collected. The Drug Screen field was also updated to capture when a patient had more than five classes of drug detected on a toxicity screen. Finally, the edit check on a small number of fields were adjusted to require a high level of completion in each quarterly submission

During FFY 2020 - 2021, a new trauma registry vendor was selected, and a new system was rolled out on 12/06/2021. The new registry is aligned with the American College of Surgeons National Trauma Data Standard and includes

custom Massachusetts State fields. The new web registry also includes integrated reporting tools that will allow hospital partners to view data in real time and compare to a Massachusetts benchmark. Reports are being developed to ensure data quality, uniformity, and timeliness. Once migration of historic data is complete and validated, the new Massachusetts Trauma Registry will include all hospital trauma data submitted since 2008.

Death Certificates – The Massachusetts Registry of Vital Records and Statistics collects certificates for all deaths that occur within Massachusetts as well as deaths of Massachusetts residents that occur outside of the Commonwealth. Vital Information Partnership (VIP) is the electronic death registration system. Relevant data include ICD-10 diagnostic codes for underlying and secondary causes of death (which describe injury cause, MV-person type, the nature and body location of injuries and other conditions present), patient demographics, including occupation and industry, and date of death

Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS) and Youth Health Survey (YHS) – These anonymous surveys collect statewide estimates on self-reported behaviors either annually (BRFSS) or bi-annually (YRBS and YHS). The BRFSS is a telephone survey administered to a sample of adult MA residents ages 18 and up. The YRBS and YHS are written surveys administered to a sample of MA public high school students, with the YHS also administered to public middle school students. Specific questions related to motor vehicle injuries include seat belt use (BRFSS, YRBS, YHS), riding in a car driven by someone who had been drinking alcohol (YRBS, YHS middle school), riding in a car driven by someone who had been smoking marijuana (YHS middle school), driving a car after drinking alcohol (BRFSS, YRBS, YHS), driving a car after smoking marijuana (YHS), talking on a cell phone while driving (YRBS), texting while driving (YHS), texting or emailing while driving (YRBS), and drowsy driving (YHS). Responses can be broken down by respondent demographics, other risk behaviors, and social determinants of health.

System Performance Measurement(s)

MDPH has a benchmark/performance measure to evaluate the completeness of the MATRIS data by tracking the number of ambulance services submitting Version 3 reports to the system. For FFY 2021, the benchmark/performance measure was to improve completeness of MATRIS by increasing the number of ambulance services submitting NEMSIS Version 3 reports to the system from 304 between

4/1/20 to 3/31/21 to 309 between 4/1/21 to 3/31/22. As of 3/31/22, 309 out of 310 licensed Ambulance services had migrated and were submitting data to MATRIS NEMSIS V3 and 310 were approved to make the migration.

In 2019 and 2020, the MDPH Office of Data Management and Outcomes Assessment (ODMOA) developed a new process to assess the quality of Hospital Case-mix data received from the Center for Health Information and Analysis (CHIA). The results of these assessments are summarized in standard reports available to MDPH epidemiologists. ODMOA communicates any serious data quality problems to CHIA and requests a new file. ODMOA also standardizes variable names and formats across the three data types (hospital discharge, emergency department discharge, and observation stay data) in the datasets analyzed by the Injury Surveillance and other programs. **The MDPH Injury Surveillance Program reported a problem in the uniformity of naming diagnosis codes in Outpatient Observation Stay (OOS) and ODMOA corrected this problem in Spring 2022.**

System Accessibility

MATRIS data is summarized and reported for quarterly opioid surveillance statistics. These reports are posted to the Mass.gov website and available to the public at www.mass.gov/lists/current-opioid-statistics. The MATRIS NEMSIS V3 data are being incorporated into the DPH Public Health Information Tool which will allow the public to extract aggregate de-identified data from the website www.mass.gov/orgs/population-health-information-tool. Data use agreements have been completed and data sets are being prepared to contribute. In SFY 2021 the data was submitted to the NEMSIS national repository making it accessible for the national dashboards and available for national IRB use. MATRIS data will be shared with the Injury Surveillance Program for linkage with Crash, Hospital and Trauma Registry data and incorporated in the MA Crash Related Injury Surveillance System (MA CRISS). MATRIS data has been shared in previous years via the IRB process with other TRCC members and integrated with Crash data for analysis; provided to the Motorcycle Safety program for inclusion in training materials and conference presentation.

The Massachusetts Trauma Registry (TR) launched 12/1/21 is intended to be more user friendly and allow for easier data submissions. By selecting a national trauma vendor who adheres to the IDTX trauma submission format,

the new TR will streamline submissions for trauma centers using hospital-based trauma vendor software. Community hospitals with no trauma registry will receive DPH and vendor-based support submitted their data.

Trauma Centers will be able to extract pre-validated data from their hospital-based registries and upload directly to the new web-based Massachusetts Trauma Registry, provided by ESO. The universal IDTX format supports high-quality, uniform data meeting the national data standards. Community hospitals will have DPH and vendor support to create files, under the same standards, from their medical records systems. These data can either be direct data entered into the trauma registry web-portal or uploaded using the same process as trauma centers.

The MDPH Injury Surveillance Program (ISP) analyzes MA Hospital Case-mix, Death, BRFSS, YRBS, and YHS data to track fatal and nonfatal MV-traffic injuries, and identify disproportionately impacted populations, health outcomes, and risk factors, including being under the influence of alcohol or drugs at the time of the crash. ISP works with the MDPH Injury Prevention and Control Program to develop and disseminate data briefs and fact sheets based on findings from these analyses. Announcements about the release of data products and key data findings are disseminated to a broad range of traffic safety stakeholders electronically, and the data products are posted for public access at: www.mass.gov/injury-surveillance-program. BRFSS reports are available at: www.mass.gov/behavioral-risk-factor-surveillance. YRBS reports are available at: www.doe.mass.edu/sfs/yrbs and YHS reports are available at: www.mass.gov/lists/massachusetts-youth-health-survey-myhs.

Traffic safety stakeholders and others can also make specific data requests to ISP. ISP also frequently presents MA MV injury data at MA Traffic Safety Coalition meetings. MDPH staff, including ISP, IPCP, and BHCSQ, also participate in and provide relevant injury surveillance/EMS data to Emphasis Area workgroups helping to develop the 2023 MA Strategic Highway Safety Plan.

Training & Technical Assistance Opportunities

The recent Massachusetts TR procurement includes training for all hospital-based users. Once TR implementation is complete, training will be provided by the vendor.

ESO, the trauma registry vendor will provide two general trainings, one trauma center specific and one community hospital specific training. These will be recorded and made available to our hospital partners. Additional user guides and manuals will also be available to users. ESO and DPH staff will be available to assist as facilities come online and begin submitting data to the new Massachusetts Trauma Registry.

Recent Developments & Challenges

A Trauma Registry Legacy dataset, combining all registry data through federal fiscal year (FFY) 2020, was shared with the Injury Surveillance Program (ISP) for linkage to the MA Crash-Related Injury Surveillance System (MA CRISS) in Fall 2021. ISP is assessing the quality and completeness of records involving MV crash injuries and will provide BHCSQ with a summary of findings and recommendations for improvement. BHCSQ developed a comprehensive data dictionary for the legacy dataset that includes variable names, descriptions, values, years collected, and whether variables are required of all acute care hospitals or just trauma centers. BHCSQ also releases data specification guides annually to inform facility data submission.

The NEMSIS V3 data is imported in a timelier manner, often with a day, due to the added requirement in the standard for ePCR software to automate importing to the state system, MATRIS. The data quality has improved as a result of a superior validation rule execution process implemented in V3 where the state rules are packaged into a file and integrated on the ePCR software used by the ambulance services. This process is managed with a technology called Schematron.

Due to the development of a new system to assess and clean MA Hospital Case-mix data, the MDPH ISP was unable to access final data for fiscal years (FY) 2016 – 2018 until September 2020. FY 2019 hospital discharge and emergency department discharge data became available in December 2020. It also took time for ISP to update its software codes for analyzing the Hospital Case-mix data due to the transition from ICD-9-CM to ICD-10-CM diagnosis and external cause

codes. We anticipate that final motor vehicle injury data will be available soon for analysis and use in data requests.

2.7 Data Use and Integration

- UMassSafe's Data Linkage Project linked EMS and Crash Data was concluded in December 2018. A final project report from March 2019 is available at www.mass.gov/service-details/traffic-records.
- In 2016, the MDPH Injury Surveillance Program (ISP) began linking 2012 crash and hospital case-mix data with funding from MassDOT. With additional support from MassDOT and the Centers for Disease Control and Prevention (CDC) over the past five years, this linked data system has expanded to include additional years of data and data sources, and was named the MA Crash-Related Injury Surveillance System (MA CRISS). ISP has conducted multiple analysis of MA CRISS data and released several data products based on these analyses. These include data briefs on driver and crash -related factors contributing to traumatic brain and spinal cord injury in hospitalized car/truck drivers and motorcyclists, respectively; and data briefs on demographic characteristics of hospitalized drivers, motorcyclists, and pedestrians, identified as being under the influence of alcohol or drugs at the time of the crash. These data briefs are available data at: <https://www.mass.gov/injury-surveillance-program>.

With FFY 21 405c-funding, ISP obtained driver license/history data for drivers involved in crashes in linked FY 2016-2018 MA CRISS data, assessed driver data quality and created a limited data dictionary, and integrated MA and out-of-state driver records with linked crash-hospital case-mix data. This project met the benchmark/performance measure to improve the accessibility and integration of the crash, driver, and injury surveillance/EMS systems, by increasing the number of MA driver records integrated with MA crash and injury surveillance (hospital case-mix) data from 38,000 as of 7/1/21 to 153,024 by 9/30/22. ISP is currently conducting an analysis of linked driver-crash-hospital case mix data based on input from the MA Traffic Safety Coalition and other stakeholders. This analysis will compare prior crashes and OUI convictions among drivers identified as intoxicated in hospital discharge data and hospitalized drivers not identified as

intoxicated. Findings will be shared with OGR and, following MDPH approval, with other traffic safety stakeholders.

FFY 22 405c-funding will support traffic safety decision-makers' and public access to findings from the analysis of integrated MA CRISS data by supporting skilled personnel capable of conducting analysis of this complex data system. Specifically, ISP will analyze MA CRISS data to assess the accuracy, completeness, and uniformity of key variables in crash data and present recommendations for potential data quality improvements to the Traffic Records Coordinating Committees. With support from IPCP, ISP will also solicit input from key traffic safety stakeholders on an additional analysis of integrated driver-crash-hospital case mix data in MA CRISS to inform traffic safety measures. ISP will also link additional years of each data source to MA CRISS as they become available.

- In 2019 the MA Department of Public Health released the Population Health Information Tool (PHIT) at www.mass.gov/guides/phit-data-injuries-in-massachusetts. This tool allows the public to query MA health data. The PHIT includes data on unintentional MV-traffic hospitalizations, ED visits and deaths for MV-occupants, motorcyclists, cyclists and pedestrians. The website can provide maps and graphs of selected data. Data can be broken down by sex and geographic region. Currently 2007-2014 MA data are available. Work is underway to integrate MATRIS data into PHIT. This will allow more detailed data exploration of MATRIS data by the public. Data can be displayed and aggregated by geographic regions, or by demographic characteristics.
- Public access to data in the CDS is through the IMPACT Crash Data Portal at apps.impact.dot.state.ma.us/cdp/home.

2.8 Related Planning Documents/Resources

- MassDOT's Strategic Highway Safety Plan at www.mass.gov/service-details/strategic-highway-safety-plan

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- MassDOT's State Transportation Improvement Program at www.mass.gov/service-details/state-transportation-improvement-program-stip
 - MassDOT's Highway Safety Improvement Plan at www.mass.gov/service-details/highway-safety-improvement-program
 - MassDOT's Highway Safety Improvement Plan (2020) at safety.fhwa.dot.gov/hsip/reports/pdf/2020/ma.pdf
 - MA State Police's Commercial Motor Vehicle Plan at www.mass.gov/orgs/massachusetts-state-police
 - OGR's Highway Safety Plan, Safety Belt Survey and Cell Phone Survey at www.mass.gov/orgs/office-of-grants-and-research

3.0 Traffic Records Assessment

In January 2019, OGR with TRCC assistance finished a NHTSA-approved Traffic Records Self-Assessment for Massachusetts, guided by NHTSA's *Traffic Records Program Assessment Advisory, 2018 Edition*. NHTSA requires states to conduct or update an assessment of their highway safety data and traffic records systems every five years in order to qualify for federal Section 405(c) grant funding from NHTSA.

This section includes the resulting recommendations from the 2019 assessment. After each one there is information (bolded and underlined) about what Massachusetts is or is not planning to do in regard to the recommendation in FFY 2023.

Where action is being taken, the entry will highlight if the effort involves a Section 405-c funded project included in OGR's proposed FFY 2023 Highway Safety Plan (HSP) and in Section 4 of this plan. Such an entry needs to address an unmet recommendation from the 2019 assessment, improve a minimum of one performance attribute (accessibility, accuracy, completeness, integration, timeliness, and uniformity) of a core system, and have at least one benchmark and performance measure. Ideally the project also provides a benchmark and performance measure that can demonstrate quantitative improvement in an attribute of a core system as described in the Section 405-c FAST Act funding guidance.

If the Commonwealth is unable to address a recommendation in FFY 2023, this will be explained (bolded and underlined) below in this section.

With its FFY 2023 Section 405-c application, Massachusetts is proposing two performance measures to show quantitative improvements in the performance attributes of core systems. These measures were developed using NHTSA's *Model Performance Measures for State Traffic Records Systems, 2011 edition* and the Section 405-c FAST Act funding guidance. These measures were also provided to NHTSA separately in Interim Progress Reports as part of our 405-c application.

The first measure shows improvement in completeness of the MDPH's Massachusetts Ambulance Trip Record Information System (MATRIS). The improvement achieved was an increase from 301 ambulance services with National Emergency Medical Services Information System (NEMSIS) compliant electronic data collection modules and software submitting Version 3 data records to MATRIS between 4/1/20 to 3/31/21 to 309 services between 4/1/21 to 3/31/22. As of the end of March there were 310 services in Massachusetts. More information on the MATRIS project is in Sections 2.6, 3.8 - 9, and 4.2 as well as at www.mass.gov/info-details/massachusetts-ambulance-trip-record-information-system-matris.

The second measure shows the MassDOT Office of Transportation Planning (OTP) continues to improve the completeness of the Route Feature Class of the Massachusetts Roadway Inventory System (RIS). Route Feature Class is the network feature layer for the RIS that serves as the backbone for the data organization of all of the Road Inventory event layers. Between spring 2021 and spring 2022 the improvement achieved in Route Feature Class entries was an increase of 1,443 routes, from 209,844 to 211,287. More information on MassDOT's roadway system is in Sections 2.2, 3.4, and 4.2 as well as at massdot.maps.arcgis.com/home/index.html.

Developing similar measures for other core systems and projects of the Commonwealth will be a focus for our TRCCs in FFY 2023.

OGR conducted in late 2021 and early 2022 an Availability of Grant Funds (AGF) process to identify new projects to use FFY 2022 and earlier Section 405-c funding. With TRCC input, five projects to help address recommendations from the 2019 Assessment were identified for 405-c funding in January 2022. All of these projects were approved by NHTSA in February 2022 for the Massachusetts FFY 2022 Highway Safety Plan. The projects are referenced throughout the section below and in Section 4 of this plan.

3.1 Traffic Records Coordinating Committee Management

The 2019 assessment did not have any related recommendations for TRCC management.

However, the TRCC still needs to continue to work on developing benchmarks and performance measures for its six core traffic records systems. Also, to better highlight and address unmet technical assistance and training needs for all six systems.

For the FFY 2023 405-c application, the Massachusetts TRCCs had to meet the requirement for receipt of Section 405-c funding by meeting a minimum of three times before the application submission. Since the submission of the last Section 405c application in July 2021, the ETRCC met on 10/27/21, 1/20/22, and 4/27/22.

3.2 Strategic Planning

The 2019 assessment did not have any related recommendation for Strategic Planning.

3.3 Crash System

The 2019 Traffic Records Assessment identified the following recommendations:

1. *Improve the applicable guidelines for the Crash Data System (CDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

MassDOT IT/RMV will begin the implementation of a new state-funded CDS in May 2022 and expects phase 1 to go-live early 2023. This recommendation will be addressed in the new crash system.

Given sufficient state funding for the new CDS project, at this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

2. *Improve the interfaces with the CDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The state-funded new CDS will include the ability to interface with FARS to provide more timely and complete fatality data entry to FARS.

Given sufficient state funding for the new CDS project, at this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

3. *Improve the data quality control program for the CDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

Additional quality control measures for attributes will be addressed with the new state-funded CDS.

A current and an upcoming Section 405-c funded MACCS project, managed by the Department of Criminal Justice Information Services, continue to offer the opportunity to improve the accuracy, completeness, timeliness, and uniformity of the CDS by increasing the quantity and quality of eCrash Reports submissions (though usage of MACCS for crash reporting remains low).

A Department of Public Health's Injury Surveillance Program will use Section 405-c funding to further assess the completeness, accuracy, and uniformity of key variables in crash data and present recommendations for potential data quality improvement actions and related projects to the Traffic Records Coordinating Committees.

Section 405-c funded projects to address in part this recommendation are described in the FFY 2023 Highway Safety Plan and Section 4 of this plan under TR 23-02, 23-03, and 23-04.

3.4 Roadway

The 2019 assessment identified the following recommendations:

1. *Improve the data dictionary for the Roadway Data System (RDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

As reported in Section 2.2, MassDOT's Office of Transportation Planning has recently updated its data dictionary and developed editing and data

storage practices with a focus on security and data quality.

Given sufficient state-funding for work on this recommendation, at this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

2. *Improve the data quality control program for the RDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

Several quality control programs have been implemented in the last year. Workflow assignment and recordkeeping with a baked-in quality control step using the Wrike software for all data updates has been implemented and is handled by the GIS data team lead in order to improve data accuracy and quality. Standard editing procedures and data practices have been developed and implemented, and the editing staff has been trained with recurring refreshers. Best editing practice discussion occurs with the editing staff biweekly.

Given sufficient state-funding for work on this recommendation, at this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

3.5 Driver

The 2019 assessment identified the following recommendations:

1. *Improve the data dictionary for the Driver Data System (DDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

With creation of the new RMV database, ATLAS, by FAST Enterprise, improvements were made to ensure the integrity of data fields for person, vehicle, violations, etc. by expanding field level validation. Use of third-party tools such as NADA were implemented to improve the accuracy and completeness of vehicle descriptions. For person identity, checks with NAPHSIS, DPH Vital Statistics, CIS (SAVE), SPEX (S2S), USPVS (Passport checks) were implemented. The data dictionary is proprietary and maintained by FAST Enterprises.

With FFY 2022 405-c funding, the MDPH Injury Surveillance Program (ISP) developed a limited Driver Data Dictionary describing the name, description, format, values, and value definitions for driver data it received from the RMV for integration into MA CRISS. ISP provided this limited data dictionary to the RMV in February 2022.

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

2. *Improve the data quality control program for the Driver data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The MDPH ISP addressed this recommendation in part with FFY 2022 405-c funding by assessing the quality of the Driver data received from the RMV for integration into MA CRISS. These were records of drivers involved in 2015-2018 crashes in linked MA CRISS data. Data were assessed for completeness and uniformity.

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

3.6 Vehicle

The 2019 Traffic Records Assessment identified the following recommendations:

1. *Improve the interfaces with the Vehicle Data System (VDS) that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The RMV's new operating system, ATLAS, has been fully implemented.

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

2. *Improve the data quality control program for the VDS that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The RMV's new operating system, ATLAS, has been fully implemented.

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

3.7 Citation / Adjudication

The 2019 assessment identified the following recommendations:

1. *Improve the description and contents of the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

2. *Improve the data dictionary for the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

As described in Section 2.5, in Phase 1 of the Section 405-c funded Accessible Citation Data Project improvements will be made by the Merit Rating Board to the current data dictionary of the citation data system in summer 2022.

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

3. *Improve the data quality control program for the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

A Section 405-c funded MACCS project, managed by the Department of Criminal Justice Information Services, will improve the accuracy, completeness, timeliness, and uniformity of the Citation Data System by increasing the quantity and quality of eCitation submissions. This is described in the FFY 2023 Highway Safety Plan and Section 4 of this plan under TR 23-03.

3.8 Injury Surveillance/EMS

The 2019 assessment identified the following recommendations:

1. *Improve the interfaces with the Injury Surveillance systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

The RMV and DPH looked into creating an interface between EMS and RMV data for the Massachusetts Fatality Analysis Reporting System (FARS) project. A statute change is required to allow sharing of the EMS data. Other interfaces would require significant funding.

Section 2.7 describes the DPH ISP MA CRISS (Crash, Hospital Case-mix, Trauma Registry, MA Ambulance Trip Record Information System (MATRIS), Vital Statistics (deaths), Post-mortem Toxicology, Drivers License/History, and Citation/Adjudication data) in more detail. This currently non-405-c funded project is helping in part to meet this recommendation.

Currently the Trauma Registry has begun the work of linking Trauma Registry data with data sources that contain outcomes. The planned matches will use propensity score matching (a commonly used method) to link Death Data and Case Mix Hospital inpatient and ED discharge data. An extract has been received of relevant Death Data and this match scheduled first, followed by an attempted Case Mix match.

As of Spring 2021, trauma data have been successfully matched to 2015 Case Mix and 2016 Vital Statistics data. These have been used to identify additional trauma mortality not captured in the trauma registry due to hospital discharge or repeat admissions for the same injury. Additional work is being performed to expand these matches to additional years of data.

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

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2. *Improve the data quality control program for the Injury Surveillance systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.*

MATRIS sends monthly data quality reports to all ambulance services and regularly works with ambulance services to improve their quality. MATRIS data quality control has further improved with the migration to NEMSIS V3 that allows for rejection of records that do not meet quality standards. In SFY 2021 MDPH plans to review the over 200 rules and make needed revisions. Beginning in 2016, trauma data submitters receive automated data quality reports and whether a data submission was accepted. With CDC funding, the ISP is assessing the completeness and uniformity of FY2016-FY2018 Trauma Registry data for patients with motor vehicle crash injuries. ISP will provide a summary of this assessment and any recommendations for improvement with the data owners, the Bureau of Healthcare Safety and Quality (BHCSQ).

At this time no 405-c grant funded work on this recommendation is planned for FFY 2023.

3.9 Data Use and Integration

The 2019 assessment identified the following recommendation:

Improve the traffic records systems capacity to integrate data that reflect best practices identified in the Traffic Records Program Assessment Advisory.

The integration of traffic record systems in Massachusetts is primarily being addressed at the time of the submission of this report by the MDPH's MA Crash-Related Injury Surveillance System (MA CRISS), in particular through its Section 405-c funded Integration and Analysis of Crash, Injury Surveillance, and Driver Data Project (TR 22-05). MA CRISS is managed by the MDPH Injury Surveillance Program (ISP). MA CRISS currently integrates 2012-2018 crash and hospital case-mix data sets, and driver data associated with 2015-2018 crashes. **ISP will also link additional years of each data source to MA CRISS as they**

become available through its 405-c funded MA Crash-Related Injury Surveillance System: Data Quality Assessment and Analysis Project (TR 23-04). CDC funding is supporting ISP's current integration of Trauma Registry with other MA CRISS data. ISP also has data use agreements in place to obtain and integrate MATRIS and Vital Statistics (death) data into MA CRISS.

In FFY 2024 the MATRIS system will be migrated to the NEMSIS V3.5 standard. A new feature to this release is the Universally Unique ID (UUID) that will identify an EMS run with a unique ID. This value is also included in the new ACS National Trauma Data Bank requirements and will facilitate linkage

The UUID has already been incorporated in the FFY 2021 Massachusetts Trauma Registry and the system is ready to accept this linkage data element as soon as it is available to hospital partners.

Data integration will also be addressed in FFY 2023 through further planning/discussion by the TRCC.

A Section 405-c funded project to address in part this recommendation is described in the FFY 2023 Highway Safety Plan and Section 4 of this plan under TR 23-04.

4.0 Traffic Records Projects

This section lists projects planned for FFY 2023 as well as recently completed projects. This section details whether projects are funded through Section 405-c funding or other sources of funding.

For Section 405-c funded projects, this section provides (bolded and underlined) key project updates as available, anticipated performance attribute impacts (i.e., improvements in accessibility, accuracy, completeness, integration, timeliness, and uniformity), and how projects address, ideally with quantitative improvement, recommendations from the 2019 Traffic Records Assessment.

OGR conducted in late 2021 and early 2022 an Availability of Grant Funds (AGF) process to identify new projects to use FFY 2022 and earlier Section 405-c funding. With TRCC input, five projects to help address recommendations from the 2019 Assessment were identified for 405-c funding in January 2022. These projects were approved by NHTSA for the Massachusetts FFY 2022 Highway Safety Plan in February 2022. Two projects are expected to be completed within FFY 2022 and are described in Section 4.3. The other three projects will continue and be part of the FFY 2023 HSP and are described in Section 4.1.

Below is a list of associated performance targets for FFY 2023:

Traffic Record Performance Target #1 - Decrease the rate in which occupant coded fields (protective system, sex, transported by, injury severity, ejected) are left empty in police crash reports queried within MassDOT's crash data portal, IMPACT, by 20% (2.23 relative percentage points) from 11.15% (62369/621595) in January-June 2021 to 8.92% in April-June 2023

Performance Target Justification - To enhance the accessibility, accuracy, completeness, timeliness, and uniformity of the crash data system of Massachusetts, UMass-Amherst/UMassSafe needs to decrease the rate in which occupant coded fields (protective system, sex, transported by, injury severity, ejected) are left empty in police crash reports queried within MassDOT's crash

data portal, IMPACT, by 20% (2.23 relative percentage points) from 11.15% (62369/621595) in January-June 2021 to 8.92% in April-June 2023.

Traffic Record Performance Target #2 – Between 7/1/22 and 6/30/23, DCJIS will install approximately 400 mobile printers for police vehicles and provide associated training for an estimated 36 departments new to MACCS.

Performance Target Justification - To enhance the accuracy, completeness, integration, timeliness, and uniformity of the citation/adjudication and crash data system of Massachusetts, DCJIS needs between 7/1/22 and 6/30/23 to install approximately 400 mobile printers for police vehicles and provide associated training for an estimated 36 departments new to MACCS.

Traffic Record Performance Target #3 – Increase the number of linked crash-acute hospital case mix records held by MA CRISS in which the injury severity field is assessed for accuracy, completeness, and uniformity from 0 as of 8/1/22 to 40,000 by 6/30/23.

Performance Target Justification - To improve accuracy, completeness, and uniformity of the crash, driver, and injury surveillance/EMS data systems of Massachusetts, MDPH's MA CRISS needs to increase the number of linked crash-acute hospital case mix records held by MA CRISS in which the injury severity field is assessed for accuracy, completeness, and uniformity from 0 as of 8/1/22 to 40,000 by 6/30/23.

4.1 FFY 2023 405-c Funded Projects

Availability of Grant Funds for Traffic Safety Information Systems Improvement Grant Program, Section 405-c funded Projects

Highway Safety Plan Task: TR-23-01

Office of Grants and Research

Budget: yet to be determined (NHTSA, Section 405-c)

One or more Availability of Grant Funding (AGF) processes will be conducted to provide Section 405(c) funding on a competitive basis to measurable projects to

improve the accessibility, accuracy, completeness, integration, timeliness, and/or uniformity (a performance attribute) of one or more of the following six core traffic records systems: crash data system, roadway inventory file, vehicle registration, driver history, citation/adjudication, and injury surveillance system. Improving these systems will enhance the ability to identify priorities for a diverse range of local, state, and federal traffic safety programs impacting multiple areas of Massachusetts. Permissible projects could also evaluate the effectiveness of efforts to improve these six systems; link these systems with other state or federal data systems; and enhance the ability of stakeholders to observe and analyze local, state, and national trends in crash occurrences, rates, outcomes, and circumstances. Only units of state and local government or not-for-profit organizations with a public purpose would be eligible to apply for funding. All funded projects must help to meet at least one unmet recommendation from the Commonwealth's 2019 Traffic Records Assessment. Project must also have a minimum of one measurable benchmark and one performance measure related to a performance attribute of one of the state's six systems. AGF responses will be reviewed and recommended by an OGR-selected AGF review committee and the Executive-level Traffic Records Coordinating Committee. Those projects approved for funding would then be submitted to NHTSA and then EOPSS for review and approval.

Each resulting project will support one or more of the FFY 2023 performance targets listed above and/or a new one if necessary.

Crash Report E-Manual: Law Enforcement Agency Targeted Resources to Improve Crash Data Quality

Highway Safety Plan Task: TR-23-02

Budget: \$149,362 (NHTSA, Section 405-c)

This project by the University of Massachusetts-Amherst's UMassSafe will further enhance the Massachusetts Law Enforcement Crash Report E-Manual at masscrashreportmanual.com. Building on previous 405-c funded projects that built and then expanded this tool, this new project will provide greater content, features, functionality, and further promote the use of the tool. Major enhancements to result include: additional interactive overlays for use by law enforcement agencies (LEA); ratings/rankings of LEA crash reporting completeness; expansion/updates to Traffic Records News Page.

This project will enhance the accessibility, accuracy, completeness, timeliness, and uniformity of the crash data system of Massachusetts. This project will help to address in part the data quality control program recommendation for the crash data system from the 2019 Massachusetts Traffic Records Self-Assessment.

This task will support performance target 1:

Improve the completeness of Massachusetts crash data by decreasing the rate in which occupant coded fields (protective system, sex, transported by, injury severity, ejected) are left empty in police crash reports queried within MassDOT's crash data portal, IMPACT, by 20% (2.23 relative percentage points) from 11.15% (62369/621595) in January-June 2021 to 8.92% in April-June 2023.

Motor Vehicle Automated Citation and Crash System (MACCS)

Highway Safety Plan Task: TR-23-03

Budget: \$166,254 (NHTSA, Section 405-c)

To continue efforts since 2017 to achieve statewide use of MACCS, the Department of Criminal Justice Services (DCJIS) will acquire and install approximately 400 mobile printers for police vehicles and provide associated training to assist an additional estimated 36 departments waiting to join MACCS. Any printers not necessary for this effort will be allocated to existing departments using MACCS with an interest in expanding their use of MACCS to more vehicles/officers. In part with input from law enforcement users, DCJIS will also make further software improvements to MACCS. All efforts will be coordinated on a day-to-day basis by DCJIS's state funded MACCS Program Coordinator, assisted by other state funded DCJIS staff.

This project will enhance the accuracy, completeness, integration, timeliness, and uniformity of the citation/adjudication and crash data system of Massachusetts. This project will help in part to meet the data quality control program recommendation for the citation/adjudication and crash data systems from the 2019 Massachusetts Traffic Records Self-Assessment.

This task will support a performance target 2:

Between 7/1/22 and 6/30/23, DCJIS will install approximately 400 mobile printers for police vehicles and provide associated training for an estimated 36 departments new to MACCS.

MA Crash-Related Injury Surveillance System: Data Quality Assessment and Analysis

Highway Safety Plan Task: TR-23-04

Budget: yet to be determined (NHTSA, Section 405-c)

The Massachusetts Crash-Related Injury Surveillance System (MA CRISS) currently includes integrated crash, acute hospital case mix, and driver license/history data for multiple years. Building on a prior 405c funded project, the MA Department of Public Health (MDPH) - Injury Surveillance Program's (ISP) proposes assessing the completeness, accuracy, and uniformity of key variables and presenting the recommendations for potential data quality improvement actions and related projects to the Traffic Records Coordinating Committees. With the input of key traffic safety stakeholders, ISP will also conduct analysis of integrated MA CRISS data to provide stakeholders with relevant findings that can guide traffic safety measures. ISP will link additional years of each data source to MA CRISS as they become available. Funding will also allow ISP to continue its work analyzing the ever-expanding MA CRISS data and providing related analytical support to traffic records stakeholders. This funding will partially support two positions to accomplish the projects: current MA CRISS epidemiologist, Jeanne Hathaway; and a contract epidemiologist with advanced analytic, data linkage, and SAS programming skills.

This project will enhance the accuracy, accessibility, completeness, integration, and uniformity of the crash, driver, and injury surveillance/EMS data systems of Massachusetts. This project will help to address in part the data quality control program recommendation for the crash data system from the 2019 Massachusetts Traffic Records Self-Assessment.

This task will support a new performance target 3:

Improve the accuracy, completeness, and uniformity of crash, driver, and injury surveillance/EMS data, by increasing the number of linked crash-acute hospital

case mix records in MA CRISS in which the injury severity field in crash data is assessed for accuracy, completeness, and uniformity from 0 as of 8/1/22 to 40,000 by 6/30/23.

4.2 Non-405-c Funded Projects

Fatality Analysis Reporting System (FARS)

Registry of Motor Vehicles

Budget: \$120,000 (NHTSA Cooperative Agreement)

NHTSA will continue to be provided by the Registry of Motor Vehicles (RMV) with motor vehicle-related fatality data from Massachusetts for the national FARS and FastFARS through a dedicated RMV position. This FARS Analyst position will be supported with NHTSA as well as state funding. The Massachusetts FARS Manual will continue to be enhanced.

Massachusetts Ambulance Trip Record Information System (MATRIS)

MA Department of Public Health

Budget: yet to be determined (state funding and CDC)

The MA Department of Public Health continues to improve the completeness of MATRIS, specifically the National Emergency Medical Services Information System (NEMSIS) V3 electronic data collecting and reporting by MA ambulance services. **Between spring 2021 and spring 2022 the improvement achieved was an increase from 301 to 309 out of 310 ambulance services in the state.** More information on MATRIS is available in Sections 2.6, 3.8, and 3.9.

Roadway Inventory System Data Completeness and Quality including Route Development Project

MassDOT/Office of Transportation Planning

Budget: \$230,638 state funding

The MassDOT Office of Transportation Planning (OTP) continues to improve the completeness of the Route Feature Class of the Massachusetts Roadway Inventory System (RIS). Route Feature Class is the network feature layer for the Roadway Inventory File that serves as the backbone for the data organization of all of the Road Inventory event layers. **Between spring 2021 and spring 2022 the improvement achieved in Route Feature Class entries was an increase of 1,443 routes, from 209,844 to 211,287.** More information on MassDOT's roadway system is in Sections 2.2 and 3.4 as well as at massdot.maps.arcgis.com/home/index.html.

4.3 Projects Completed in FFY 2022

Accessible Citation Data

Merit Rating Board (MRB)

Budget: \$119,206 (NHTSA, Section 405-c)

Completed September 2022

This project by MRB, a section of MassDOT's Registry of Motor Vehicles, started a multi-phase effort to enhance the ability of traffic records stakeholders and the public to view and analyze traffic citations data and trends. The greater accessibility to this data will assist planning efforts of these stakeholders to reduce traffic crashes and resulting fatalities, injuries, and economic loss in Massachusetts. The proposed public Internet portal will make available select citation data in both summary and detail format. This project is being conducted in two phases, with this task using 405c funding for the first phase. In Phase 1 the MRB's project team used MassDOT IT contractors to identify data needs and system requirements from stakeholders to develop a detailed project scope, schedule, and budget for Phase 2. This first phase also saw development of the necessary procurement documentation to hire a vendor to complete Phase 2. Additionally in Phase 1, improvement was made to the current data dictionary of the citation data system. In Phase 2 of the project the selected vendor will work with MassDOT IT and MRB staff to build and implement the portal. **This project enhanced the accessibility of the citation/adjudication data system of Massachusetts. This project addressed in part the data dictionary recommendation from the 2019**

Motor Vehicle Automated Citation and Crash System (MACCS)

Department of Criminal Justice Information Services (DCJIS)

Budget: \$199,090 (NHTSA, Section 405-c)

Completed June 2022

MACCS is a browser-based application available statewide for the purpose of collecting, reconciling, and exchanging motor vehicle incident information including: electronic citation reporting, crash reporting, and traffic stop data collection. The goals of the MACCS project are to ensure greater officer and citizen safety by making the reporting process more efficient and safer at the roadside, improve data quality by implementing checks at the point of entry and upon submittal, and eliminate redundant data entry processes for agencies across Massachusetts. In FFY 2022 this project resulted in approximately 166 additional printers and associated hardware installed to help bring an estimated 15 local law enforcement agencies on to MACCS, along with necessary training and follow-up support. As of March 2022, there were 200 local police departments and the Massachusetts State Police participating in MACCS. The project enhanced the accuracy, completeness, integration, timeliness, and uniformity attributes of the citation/adjudication and crash data system of Massachusetts. This project addressed in part the data quality control program recommendations for the citation/adjudication and crash data system from the 2019 Massachusetts Traffic Records Self-Assessment.

Integration and Analysis of Crash, Injury Surveillance & Driver Data

MA Department of Public Health's Injury Surveillance Program (MDPH-ISP)

Budget: \$112,654.50, with \$22,578.35 in FFY 21 and \$90,076.15 in FFY 22 (NHTSA, Section 405-c)

Completed June 2022

This project by the MDPH integrated driver license/history data for drivers involved in injury crashes in FY 2016-2018 with previously integrated crash and hospital case-mix data in the MA Crash-Related Injury Surveillance System (MA CRISS). As noted in Section 3.5, after developing a limited data dictionary

for driver data received from the RMV and assessing the quality of driver data, driver records were linked with FY2016-FY2018 MA CRISS records, and linkage rates and data representativeness were assessed. A report was produced with the findings of an analysis of prior crashes and OUI violations in drivers identified as intoxicated in hospital discharge data. These findings will be shared with traffic records stakeholders after internal review by MDPH. The project enhanced the accessibility and integration of the crash, driver, and injury surveillance/EMS data systems of Massachusetts. The project addressed in part the data integration recommendation from the 2019 Massachusetts Traffic Records Self-Assessment.

Crash Report Training

Massachusetts State Police (MSP)

Budget: \$164,810.89, with \$142,232.54 in FFY 21 and \$22,578.35 in FFY 22

(NHTSA, Section 405-c)

Completed December 2021

This project improved crash report training for MSP recruits at the training academy and for current troopers through in-service training. MSP was assisted in this project by the University of Massachusetts' traffic safety research program, UMassSafe. In FFY 21 the project began with a review of current MSP crash report training and that done by other states, prior research available through the MA Crash E-Manual, and interviews with state crash data stakeholders. New curriculum development followed and led in FFY 22 to a version for use at the academy with recruits, and one for in-service training with current troopers that has an online option. The project enhanced the accuracy, completeness, timeliness, and uniformity attributes of the crash data system of Massachusetts. This project addressed in part the data quality control program recommendation for the crash data system from the 2019 Massachusetts Traffic Records Self-Assessment.

Crash Reporting Improvement Project

Boston Police Department (BPD)

Budget: \$330,000, \$100,000 in FFY 21 and \$230,000 in FFY 22 (NHTSA, Section 405-c)

Completed December 2021

This project improved electronic crash reporting by the BPD by providing an application to officers to more easily submit crash data from field or office locations to BPD's records management vendor, and then on via the Department of Criminal Justice Information Services to the Registry of Motor Vehicles' (RMV) Crash Data System (CDS). This project also enhanced BPD's ability to analyze crash data and to improve traffic safety and enforcement efforts. BPD utilized city-funding to conduct officer training and other roll-out efforts for this project. The project enhanced the accuracy, completeness, timeliness, and uniformity attributes of the CDS of Massachusetts. The project addressed in part the data quality control program recommendation for the CDS from the 2019 Massachusetts Traffic Records Self-Assessment.

Improving Traffic Safety Analysis through Data Quality Assessment and Diver/Vehicle Data Integration

University of Massachusetts-Amherst's UMassSafe
Budget: \$179,587 (Section 405-c)
Cancelled November 2021

Massachusetts Ambulance Trip Record Information System (MATRIS) National Standards Compliance NEMSIS V3.5 Upgrade

MA Department of Public Health
Budget: \$122,410 (Section 405-c)
Cancelled September 2021

Massachusetts Trauma Registry Data Timeliness, Uniformity, and Custom Reporting

MA Department of Public Health
Budget: \$40,000 (Section 405-c)
Cancelled September 2021

4.4 Update on FFY 2022 Performance Targets

Below is an update on the work done to meet the performance targets in the FFY 2022 strategic plan:

TR-1: Decrease the percentage of Massachusetts State Police-submitted crash reports with invalid or incomplete entries in Accepted with Warning (AWW) fields (utilizing criteria by RMV with Crash Data System data in UMassSafe Data Warehouse) from 3.7% as of 8/31/19 to 2.78% by 12/31/21.

Progress: Because of a reporting challenge with the UMassSafe Data Warehouse, the project was unable to report if it met its performance target. However all project deliverables were successfully completed.

TR-2: Exceed the January to December 2020 benchmarks for the MA Registry of Motor Vehicles FARS Unit – for timeliness, completeness, and overall case quality - by 1% for January to December 2021.

Progress: The project didn't completely meet its performance target. The January to October 2020 benchmarks were 86.94% for Timeliness, 83.77% for Completeness, and 79.87% for Overall Case Quality. The January to October 2021 benchmarks were 86.11% for Timeliness, 86.33% for Completeness, and 75.34% for Overall Case Quality. Only in Completeness was the performance target met.

TR-3: By 6/30/22, Department of Criminal Justice Information Services (DCJIS) will install approximately 170 mobile printers for police vehicles and provide related training at an estimated 20 departments new to MACCS.

Progress: The project is still working towards its performance target, but as of February 2022, DCJIS reports it had installed 166 mobile printers at 15 departments.

TR-4: Increase the number of Massachusetts driver records integrated with Massachusetts crash and injury surveillance (hospital case mix) data from 38,000 on 7/1/21 to 152,000 by 9/30/22.

Progress: The project is still working towards its performance target, but by March 2022, 153,024 MA driver records were integrated with FY 2016 - 2018 MA crash and injury surveillance (hospital case mix) data. The MA Department of Public Health also reduced the project length to 6/30/22.

TR-5: A completeness/validity measurement of the field 'cited' in the MA Crash Data System driver data will be improved by 20% from a baseline of 36.9% (64,241/173,957 drivers) for 1/1/20-12/31/20 to 44.3% for 7/1/21-6/30/22.

Progress: This project didn't meet its performance target due to an administrative challenge involving the hiring of a proposed clerk at MA Registry of Motor Vehicles that resulted in the cancellation of the project before activity could begin.

TR-6: Increase the number of ambulance trip records successfully transmitted to the NEMSIS national repository from the Massachusetts Ambulance Trip Record Information System (MATRIS) from 0 as of 3/31/21 to 800,000 by 3/31/22.

Progress: The project didn't meet its performance goal because the project was cancelled before activity began.

TR-7: Increase the number of trauma centers and community hospitals submitting mandatory trauma reporting to the new trauma registry within 90 days of quarter closure from 0 as of 3/31/21 to 20 by 3/31/22.

Progress: The project didn't meet its performance goal because the project was cancelled before activity began.

TR-8: Increase Boston Police Department (BPD) electronic crash reporting to the

MA Crash Data System (CDS) from an estimated 7% rate as of July 1, 2020 to 70% or more by June 30, 2021.

Progress: This project was not able to meet its original performance target. After the project started the target had to be revised to reflect that BPD had only ever been paper reporting. The new goal was: increase the percentage of electronic crash reporting by the BPD to the CDS from 5.8% via paper reporting as of April 2021 to 70% via electronic reporting by December 31, 2021. As of November 2021, BPD had a 3.44% rate via paper reporting. In December 2021 BPD began electronic reporting and the exact rate is still TBD.

TR-9: Enhance Massachusetts State Police location data reported to MA Crash Data System by improving on the latitude and longitude data for 42.5% of fatal crashes being accurate within 75 feet in 2019-2020 to being accurate within 75 ft. for 70% of fatal crashes by 9/20/22.

Progress: The project didn't meet its performance goal because the project was cancelled before activity was begun.

TR-10: Increase Accessibility of Citation Data: Based on input from major traffic records stakeholders including those on the Massachusetts Traffic Records Coordinating Committee, the MA Merit Rating Board (MRB) will develop by 6/30/22 a detailed assessment document summarizing the stakeholders' current citation data uses and needs as well as desired capabilities for the proposed citation data portal.

Progress: The project began in April 2022 and is still working towards its performance target. During the contracting phase MRB requested having the report available by 7/31/22.

TR-11 Increase Completeness of Crash Data: improve the completeness of MA crash data by decreasing the rate in which occupant coded fields (protective system, sex, transported by, injury severity, ejected) are left empty in police crash reports queried within MassDOT's crash data portal, IMPACT, by 20% (2.23 relative percentage points) from 11.15% (62369/621595) in January-June 2021 to 8.92% in April-June 2023.

Progress: The project began in April 2022 and is still working towards its performance target.

TR-12 Improve accuracy, accessibility, completeness, integration, and uniformity of crash, driver, and injury surveillance/EMS data, by increasing the number of linked crash-acute hospital case mix records held by MA CRISS in which the injury severity field is assessed for accuracy, completeness, and uniformity from 0 as of 8/1/22 to 40,000 by 6/30/23.

Progress: This project is expected to begin in July 2022.

TR-13: Enhance Accuracy, Completeness, Integration, Timeliness, and Uniformity of MA Citation/Adjudication and Crash Data: between 7/1/22 and 6/30/23, Department of Criminal Justice Information Services will install approximately 400 mobile printers for police vehicles and provide associated training for an estimated 36 departments new to MACCS.

Progress: This project is expected to begin in late spring 2022.